Fairey Surveys
newsletter

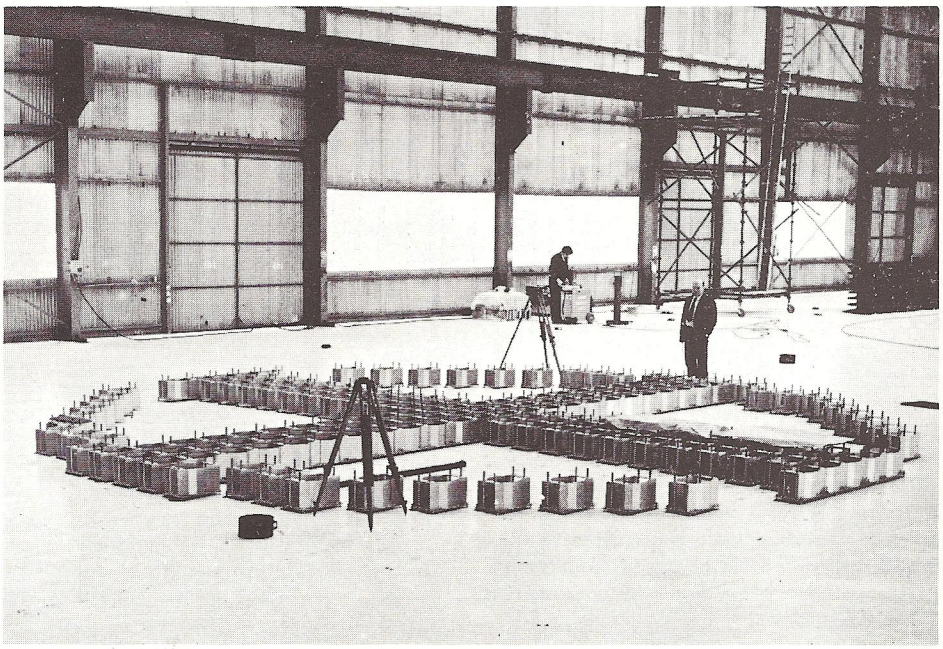
NOVEMBER 1973

11

News of developments in the world of surveying and mapping

Nuclear Power Survey

A recent high precision survey for our sister company Fairey Engineering took place completely undercover — in the reactor hall at Dungeness 'B' nuclear power station. Fairey is responsible for the reactor internals, the reactor island and the fuel handling equipment at this, the first of the Advanced Gas Cooled Reactor power stations. With both reactors in position the concrete and steel floor of the reactor hall has to be installed; a complex task involving structural steelwork, piping, electrics and over 900 precisely positioned standpipes already installed running down into the heart of the reactor. The entire structure is being pre-erected in a special building for two reasons; the time allowed for final erection is very short and installation has to fit in with the work of other contractors. Pre-erecting the assembly then taking it apart for final installation means that time on the actual reactor floor is kept to a minimum with all the snags ironed out the first time around.



For pre-erection to be successful, however, the floor on which the components are erected must be an accurate representation of the actual reactor area. To obtain this degree of accuracy Fairey Surveys carried out a survey of the reactor hall and transferred datum positions to the grid on which pre-erection would take place.

The survey of the reactor hall was based on a framework of positions established on the galleries around the interior of the structure. Permanent instrument stands were fitted over these positions and all possible sides and angles measured. The required points on the reactors were fixed by distance and angle measurements from this framework and the entire survey was adjusted by the method of variation of co-ordinates.

A grid was set out in the pre-build shed using the Mekometer and Theodolite. Instrument stands similar to those in the reactor hall were fitted over the corners and mid-points of the grid, and the standpipe positions set out and double checked.

Direct measurements between standpipe positions in the pre-build shed gave results which agreed with direct measurements in the reactor building to well within the permitted tolerances.

The charge area measures 90 ft. x 120 ft. and the survey was to an accuracy of ±0.04 ins. It was to obtain the necessary accuracy that the National Physical Laboratory's Mekometer was used, another example of this instrument's utility. Although the main survey is completed, further visits will be made to Dungeness 'B' to check on any dimensional changes due to such causes as settling and temperature.

FAIREY SURVEYS SCOTLAND

This month sees the opening of another regional office in Livingston New Town, near Edinburgh, to provide a permanent and more personal service for our increasing number of clients in Scotland and the north of England. The office will incorporate a small map production unit, equipped with a Zeiss Stereometrograph and cartographic facilities. General Manager of Fairey Surveys Scotland is Mr. W.A.S. Clark, who was featured in Newsletter 9.

Planning with the LANDOWNER

We are happy to include in this issue of our Newsletter, a paper on one aspect of land use planning written by Donald Denman, Professor of Land Economy at Cambridge University. This continues our series of articles by international experts on topics relating to surveying and mapping.

Two years have passed since Conservation Year in Europe. With remarkable suddenness conservation has given place to concern for the entire human environment: 1972 is set to become human environment year.

For the first time the nations of the world will get together at Stockholm to debate the responsibility of mankind for an improved human environment. Facing the nations gathered there this summer the most profound questions to be asked will be those concerned with the power of control, national and international. What is this power? Who wields it: and why? Here in Britain as in America and elsewhere in the world wherever Governments have shouldered responsibility for the public control of land use, opinion unreflectingly assumes that the power to control the use of land and natural resources is in the hands of central and local government planning authorities.

Power to say 'No' is not the power that gets things done. No planning decision ever changed an open space into a street or a shopping precinct. Unless the owner of the land acts, nothing can or will be done.

That assumption is wrong. A planning authority deals in prohibitions; it wields a negative power — nothing more.

This simple truth is a blind spot which has blurred the vision and understanding of the planners' world for so long. Not the planner but the landowner holds the power of positive action over the use of land and hence over the platform on which every human drama that may make or mar the human environment takes place.

New philosophy

Until the landowner is understood — who he is; why he is: and how he thinks and acts — knowledge of the forces which determine the use of land will be wanting by a whole dimension.

This need not dismay the landuse planners. It in no way disparages their role or the effectiveness of it. They may indeed be excused for turning a Nelson-eye on the landowner. Land ownership is a complicated business, unintelligible without sound knowledge of the land law; local in fashion and protean in motive, often to the confounding of economic theory and principles.

Recent studies, however, have attempted to reduce differences to common denominators and standard categories and thus to prepare for planners and landowners alike a new philosophy of land use.

Because control of the environment will depend so much on voluntary pursuits, actions and attitudes, the place of the landowner in deciding the future use of resources in association with the Government planner will be more significant in the future than it has been in the past. Some cure must be found, therefore, for the blindness which fails to see clearly and understand the decisive authority of land ownership over the use of resources. The new philosophy points to a cure.

In the first place the work of prejudice must be undone. Antipathy between private landowners and Government planning authorities has led to the common notion that landownership is the preserve and prerogative of the private sector; and to speak of the positive power of ownership in land is tantamount to a reference to private property and private interests as distinct from public interests. Such confusion is born of prejudice. Land ownership as the seat of positive decision-making is as much manifest in public ownership of resources as in private property.

The distinction which the new philosophy draws is not one between private and public interests but between the positive power of property rights and the negative power of the planner.

Of equal importance is the need to demolish the false security which the planner feels, especially here in Britain, in the use of compulsory purchase powers. Landowners who oppose the fulfilment of a planner's intention can be bulldozed out of the way by the use of land acquisition powers. But compulsory purchase of land merely means putting one landowner in the place of another; substituting the willing horse for the unwilling. The process does not in the slightest measure alter the negative power of the planner.

Precisely because the property power is the only effective decision-making force and not the power of the planner, steps are taken to place the property power in other hands. To do so might or might not help the planner: it will all depend on the outlook and property rights of the new owner.

Getting rid of false notions is no more than a cleansing operation. The core of the new philosophy is the presentation of a mode of analysis which enables the planner to identify, by reference to defined standard forms, the nature and attributes of the ownership unit within which the landowner takes his decisions for land use. The analysis goes further to facilitate the study of motives and of the relationship between different forms of wealth, fixed assets and the land, in the make-up of the landowner's plans for the use of his resources.

It is a grassroots approach. Instead of planning for a nation or a region, the landowner (public or private) disposes of his resources within the limits of his own property power — and the dispositions so made determine the land use. This individual, proprietary analysis of the decision-making processes throws its own special light on the current vogue of cost-benefit analysis.

Focus on the motives and actions of individual landowners as the criteria of ultimate land-use patterns exposes some of the false and misleading assumptions on which the ideas of social costs and benefits stand. Society cannot suffer costs or incur benefits. In the real world only individual persons are the sufferers or recipients. The new approach is a help towards understanding reality in this way

This new philosophy, in which planners and landowners meet as counterparts, will require in its practical follow-through universal, comprehensive surveys and records differing in range, depth and motive from the *ad hoc* affairs of the familiar acquisition procedures. What is wanted is a running record of the proprietary interests held in the land from which motives and consequential policies can be deduced, schedules and maps on which planners can act to invite landowners to participate in the planning process.

Europe ahead

For Britain, entry into the Common Market reinforces the case for this new approach. Planning land use in Europe has a pronounced head start over us. It acknowledges the owner of interests in land as playing an essential and positive part in the use of resources and brings him into the planning process. It is possible for planners to do so in many cities and regions through the facilities provided by national and local cadastres. The cadastre is an official record and map of the ownership units of land, each defined, valued and related to its land use.

Britain needs to catch up with the Continent and indeed with many Commonwealth countries with their impressive cadastres.

County rather than national cadastres would be a logical step. They could become the responsibility of the county planning authorities with suitable links with the public records office. Registration of the ownership of common land and common rights in 1965 has already established embryonic cadastres in each county. These could be expanded and, together with the land registries, would furnish a beginning.

Politically the cadastre has proved to be on the side of private property. Where it is freely used in the planning process on the Continent it enables the planning authorities to call landowners into counsel and greatly to reduce the use of compulsory purchase. Local cadastres in Britain could well help to secure more just planning, reduce the use of compulsory purchase powers, safeguard private property and rationalise the control of the human environment.

The authors views are fully developed in a book 'Land Use', of which he is joint author with S. Prodano.

This article first appeared in The Daily Telegraph.

Leisure Maps NEW VENTURE

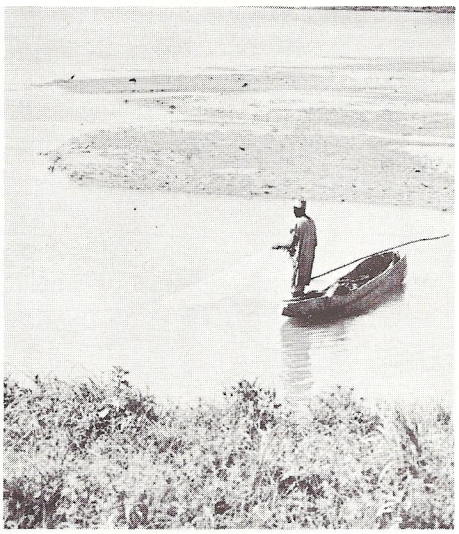
To coincide with the beginning of the 1973 European holiday season, Fairey Surveys launched its first Leisure Map — an up-to-the-minute map of Corfu, packed with information for the holiday-maker.

This will be the first of a series of Leisure Maps to be published. The next four maps; Rhodes, Tunisia, Cyprus and Jamaica, are in production and market research is being carried out on another twelve areas.

Fairey Leisure Maps are the only maps designed specifically for the holiday-maker, containing details of hotels, restaurants, beaches, golf courses and other recreational facilities (including the local discotheques!), ancient monuments, etc.

One new and pleasant aspect of selling direct to the customer, as well as through distributors in Greece and Corfu, has been the feedback of customer satisfaction represented through letters which tell us how much the use of our map has featured in the enjoyment of a holiday.

LAKE CHAD photographic survey

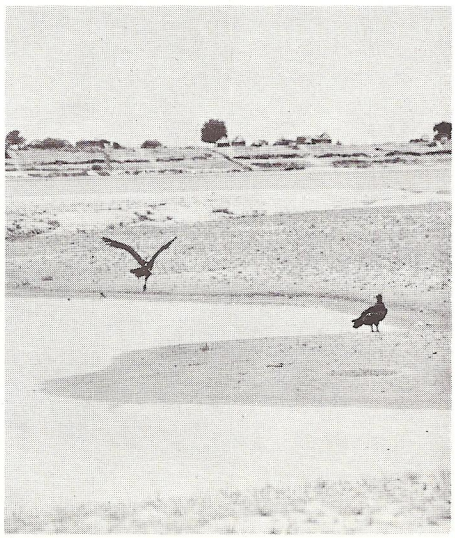


Traditional fishing methods on the shores of Lake Chad. The sandbanks have been exposed by the abnormal drought conditions

During May and June this year, Fairey Surveys took photography at 1/40,000 scale of 45,000 sq. kms. around Lake Chad in West Africa. The photography is for a British aid project on behalf of the Lake Chad Basin Commission, and the contract was awarded by the Directorate of Overseas Surveys.

The purpose of the survey was to determine the low water mark and to provide photography most suitable for mapping as much as possible of the lake bed. The flying was timed to take place when the lake was at its lowest level, and in fact, with drought conditions in much of West Africa, Lake Chad was at its lowest ever. Clear identification of the water line was obtained by taking black and white infra-red simultaneously with the panchromatic photography, using a twin-camera installation in one of our Beech Queen Air B80 aircraft.

The aircraft arrived in Chad from Ghana, where it had been working on another D.O.S. contract, and it was based at Fort Lamy. Conditions at Fort Lamy were not ideal. The crew were faced with temperatures of 45°C at ground level and below freezing point at the flying height of 20,000ft. Dust storms were a a regular feature of life in the desert, as were the vultures pictured below.



BACK TO THE STEAM AGE

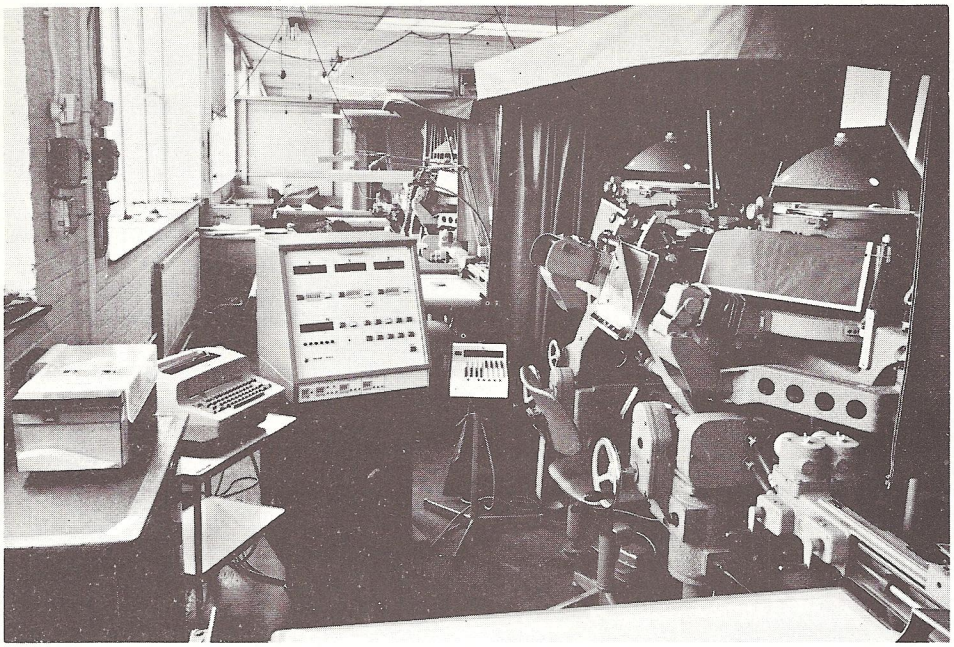
With the decline in the traditional sources of fuel, the spotlight has been turned on all alternative sources of energy and the possibility of exploiting the potential of geothermal energy is being considered. Geothermal energy — energy produced by heat from the earth's core — can be in the form of pockets of superheated steam, hot water under pressure or hot rock reservoirs.

The energy from steam and hot water deposits can be tapped to drive electricity generating plant, and one of the five known steam deposits, at Larderello in Italy, has been used to generate electricity since 1904.

Hot rock reservoirs occur much more frequently, but are difficult to exploit. Several theories have been put forward, but much more research needs to be done on the exploitation of this potentially enormous energy source.

The report of a recent conference in the U.S.A. on Geothermal energy has recommended that the Federal Government should spend about $680M over the next ten years on research and development of geothermal energy exploitation, half of which should be spent on exploration for new resources.

Airborne thermal mapping methods such as infra-red linescan have been used by Fairey Surveys for this type of exploration work. The linescan equipment can be set to record different intensities of temperature and hot rock deposits close enough to the surface for exploitation can be detected by the scanner. Fairey Surveys has already carried out a survey of this type in Pozzuoli in Italy.



Digital Capacity Increased

Earlier this year, Fairey Surveys purchased the Wild EK8 equipment for producing digital maps, when linked up to either a Wild A8 or a Wild B8 stereoplotting machine. The digital maps are produced either as a numerical grid, the co-ordinates being typed automatically by an electric typewriter linked to the EK8, or in the form of punched tape. The information on punched tape can be programmed into a computer for volumetric analysis, or for calculating the optimum height-line in road cut-and-fill programmes.

Ground Surveys

Fairey Surveys often has occasion to point out that it is not an air survey company, but rather a surveying and mapping company using aerial photography and photogrammetric instruments when technical and economic considerations demand them. A simple rationalisation would be; large areas are produced by air survey, small areas by ground survey.

Special Unit

In recent times, particularly in the U.K., the proportion of smaller area contracts has risen and this fact, coupled with matters airborne, has caused us to identify more positively within our company structure a ground survey unit. Within the last few months the responsibility for undertaking mapping by ground survey methods has been placed under Mr. John Brownlee, MSST, A of GS. Overall responsibility for all ground work still rests with Mr. B.J.S. Karalus ARICS, FRGS, but John Brownlee has his own team of surveyors and equipment, permanently set aside for U.K. ground survey tasks.

Enquiries regarding how this service can be made available to our individual clients can be made through our U.K. Marketing Group or direct to Mr. Brownlee.

In addition to the service of providing large scale maps and plans by ground or air, we have also had reason to separate within our organisation a further unit under Mr. Peter Green, specialising in high precision measurement and setting-out using the Mekometer instrument capable of accuracies less than 1mm. Since this instrument became available in production form, Mr. Green has undertaken several projects for Consulting Engineers engaged on complex structures such as the Humber Bridge, and Dungeness Nuclear Power Station. Our previous article in Newsletter 8 described the work undertaken for the Fleet Line extension to London's underground system using the prototype Mekometer.

NEWS IN BRIEF

Mapping contract of proposed M.67 Motorway for North Western Road Construction Unit has been awarded by Scott, Wilson, Kirkpatrick & Partners. Mapping at 1/2500 scale of 20 kms across the Yorkshire Moors during the grouse shooting season.

Orthophotomaps are currently being produced for Argyll County Council Planning Department. Five areas are to be covered totalling 20 sq. kms approximately at 1/2500 scale.

Colour photography of 1600 miles of Scottish coastline is being produced for the planners in the Scottish Development Department. This will provide a record of the landscape vital to their consideration of planning applications for development associated with the offshore oil and gas exploitation programme.

The mapping contract for production of 1/500 scale contoured plans of Stonehouse New Town has been awarded to F.S.L. by the East Kilbride Development Corporation. Production within 16 months of plans covering the designated area of 31 sq. kms will begin on completion of the ground control framework.

A terrain model of Scotland has been produced as a visual aid for the Public Relations team of the Glenrothes Development Corporation for use during a world sales tour.

Aerial photography and mosaics of the River Severn during low water have been produced for the Central Electricity Generating Board.

Production has begun on the initial batch of additive viewers for use with remote sensing imagery. The instrument will enable four channels of imagery to be colour combined for photo-interpretation studies.

Large mapping contract for planning and development of the Eastern Region of Saudi Arabia has been awarded by Candilis of Paris.

Photo-mosaics are being produced to assist in the Nigerian census.

If you require further information on items featured in Fairey Surveys Newsletter or would like to be added to the Mailing List for future issues, please contact:
Mrs. G.C. Edwards,
Fairey Surveys Limited,
Reform Road, Maidenhead,
Berkshire, SL6 8BU
England.
Tel: Maidenhead 21371
Telex: 847352 (Answerback AIRIMAP MAIDENHEAD)

Left, Levelling on a Scottish Motorway.